

Title	OBSERVATIONS ON THE SPAWNING HABITS OF SOME OF THE JAPANESE OPISTHOBRANCHIA (I)
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Citation	PUBLICATIONS OF THE SETO MARINE BIOLOGICAL LABORATORY (1952), 2(2): 87-90
Issue Date	1952-10-05
URL	http://hdl.handle.net/2433/174684
Right	
Type	Departmental Bulletin Paper
Textversion	publisher

OBSERVATIONS ON THE SPAWNING HABITS OF SOME OF THE JAPANESE OPISTHOBRANCHIA (1)*

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With Plate VII and 3 Text-figures

The aim of this paper is to deal with the spawning habits of some of the Japanese Opisthobranchia as they are seen in the field as well as in the laboratory aquarium. Taking this opportunity, we wish to thank to Drs. Huzio UMINOMI and Takasi TOKIOKA whose kind permission enabled us to work at the Seto Marine Biological Laboratory, and to Dr. Masao SUGIYAMA who has allowed us to use the equipments of the Sugashima Marine Biological Laboratory for our study. Parts of the observations were also carried out at our University laboratory, the fresh material of the opisthobranchs being brought back from the various parts of the Osaka Bay. The present study was commenced in the winter of 1950.

1. *Stiliger* (*Stiliger*) *boodlea* BABA

(Fig. 1)

References to the species: BABA 1938, pp. 7-8, figs. 4-5; BABA 1949, p. 31, pl. 7, fig. 21, text-fig. 17.

This species is a constant visitor to the coast around the Seto Marine Biological Laboratory. During the months of winter, the tiny black animals come ashore and usually tend to congregate in considerable numbers on the green algae such as *Boodlea coacta* and *Enteromorpha* sp. which grow in the rock pools of high tide level.

For laboratory work, we collected the same species from the shore of Tannowa, Osaka Bay. There the animals are frequent in the *Enteromorpha* zone and lay eggs, the spawning period lasting from November to March. The egg-

* Contributions from the Seto Marine Biological Laboratory, No. 179.

masses thus deposited on the leaves of *Enteromorpha* are usually in the form of a long and flattened ribbon, diminishing in size towards the end. They vary from 2-7 mm in total length, and somewhat curved to one side. The individual egg is densely yellow-yolked. Only one egg is contained in each

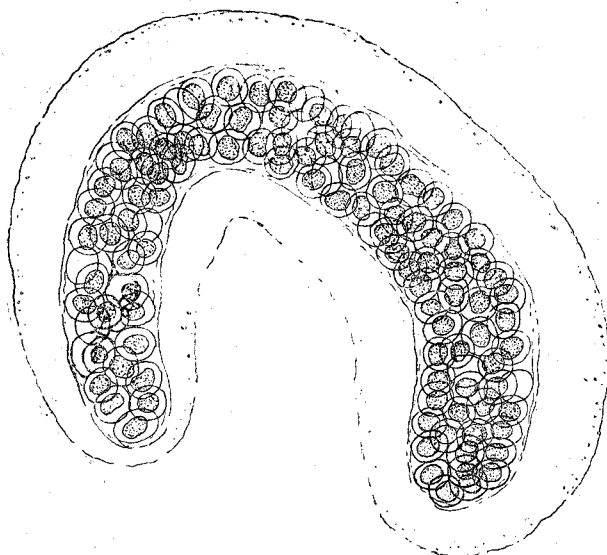


Fig. 1. *Stiliger boodleae*. A complete egg-ribbon (Tannowa, Nov. 27, 1950). $\times 80$.

2. *Stiliger (Stiliger) berghi* BABA

(Fig. 2; Pl. VII, Figs. 1-2)

Reference to the species: BABA 1937, pp. 222-223, pl. 4, fig. 7, text-fig. 8.

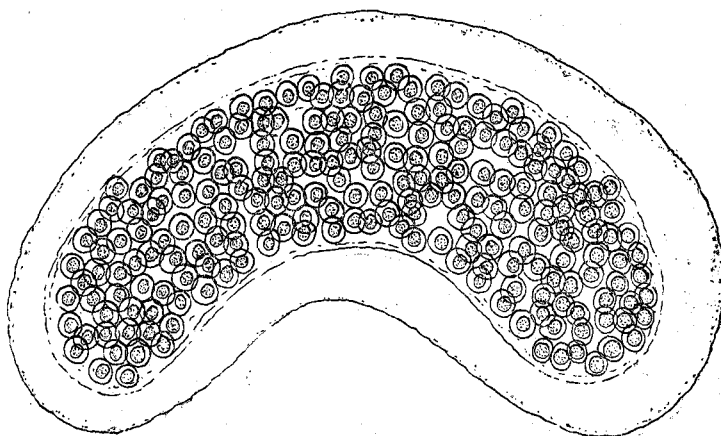


Fig. 2. *Stiliger berghi*. A complete egg ribbon (Tannowa, Mar. 13, 1951). $\times 25$.

capsule and the capsules are bound together by a gelatinous matrix. In captivity the spawning of this species has taken place usually in the night before sunrise.

The specimens of this small-sized species were collected from Tannowa, Osaka Bay, from among the delicate branches of the brown algae in shallow water. They spawned frequently in our laboratory aquarium in March.

The egg-masses we obtained are all shaped roughly as in the preceding species, but the individual eggs have no colours. The maximum size of the egg-masses in question is about 4 mm long by 1 mm broad.

3. *Hermaea dendritica* (ALDER & HANCOCK)

(Fig. 3; Pl. VII, Figs. 3-7)

References to the species: BABA 1937, pp. 223-224, pl. 4, fig. 8, text-fig. 9; BABA 1950 p. 1077, fig. 3052.

This species is fairly common on *Codium contractum* and *Bryopsis plumosa* in shallow water surrounding the Sugashima Marine Biological Laboratory. Our specimens collected alive from the sea have laid eggs in May.

The eggs are opaque, colourless, protected each by a capsule, and are thickly connected together in the form of an irregularly curved string, more than 25 mm in total length. One individual is able to spawn repeatedly. As it repeats spawning acts within a given length of time, the last strings of eggs become naturally much shortened. The gelatinous matrix which covers the whole eggs is extremely viscid and serves to fasten the string to any object.

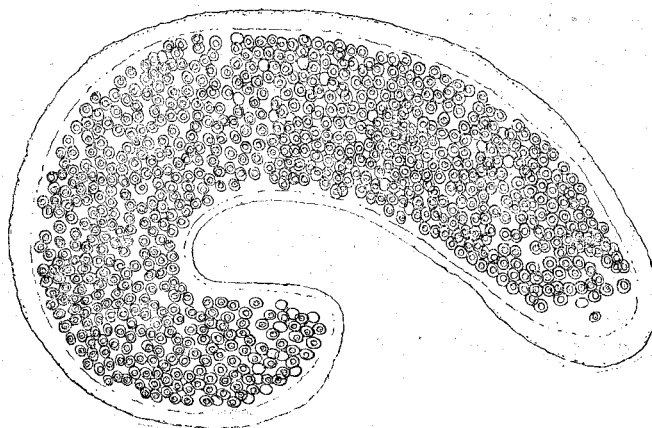


Fig. 3. *Hermaea dendritica*.
A somewhat fragmental string of eggs (Sugashima, May 25, 1951). $\times 10$

4. *Goniodoris glabra* BABA

(Pl. VII, Figs. 8-11)

References to the species: BABA 1937, pp. 294-295, pl. 1, fig. 5; BABA 1949, pp. 46-47, pl. 15, fig. 54, text fig. 47.

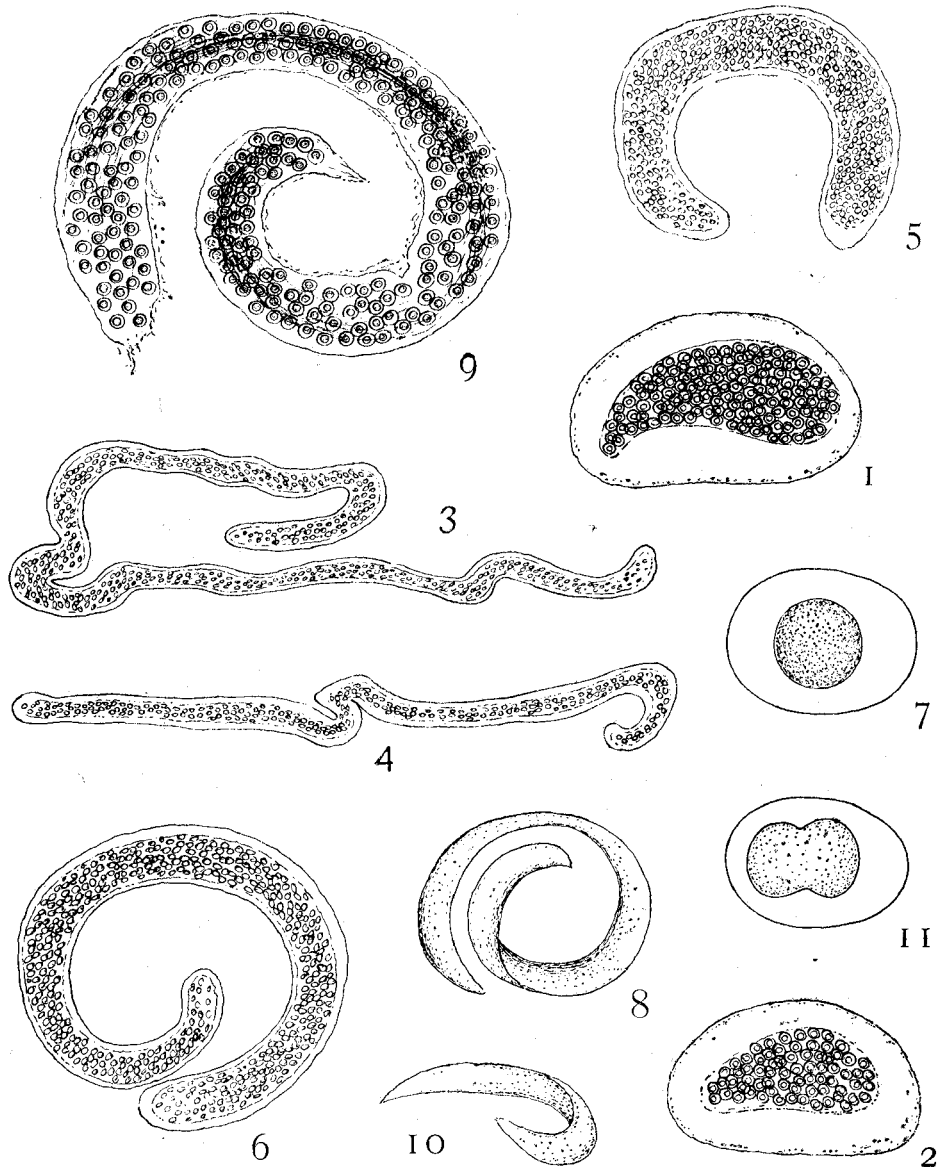
The spawning of this species was observed at the Seto Marine Biological Laboratory late in May. Typically the egg mass is deposited in the form of a spiral ribbon fastened in about $1\frac{1}{2}$ convolutions to the substratum. It measures ca. 5 mm in diameter in surface view of the whole mass. The capsules within the ribbon contain only one egg each. The latter is densely yolk-laded, and is tinged with vivid orange-yellow.

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EXPLANATION OF PLATE VII

- Figs. 1-2. *Stiliger berghi*. Two fragmental ribbons of eggs (Tannowa, Mar. 13, 1951). $\times 20$.
 Figs. 3-7. *Hermaea dendritica*.
 3-4. Typical egg-strings (Sugashima, May 6, 1951). $\times 3$.
 5-6. Somewhat fragmental egg-strings (Sugashima, May 25, 1951). $\times 7$.
 7. An egg-capsule within the egg-string. $\times 180$.
 Figs. 8-11. *Goniodoris glabra*.
 8. A complete egg ribbon in surface view (Seto, June 22, 1951). $\times 6$.
 9. The same, more highly enlarged. $\times 12$.
 10. A somewhat incomplete egg-ribbon in surface view (Seto, June 22, 1951). $\times 6$.
 11. An egg-capsule within the egg-ribbon. $\times 50$.



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